

## **FRESHWATER COUNTRY PROFILE**

### **SLOVENIA**

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**Decision-Making:** The Council for Sustainable Development (CSD) was established in 1997 as an advisory board to the Government under the auspices of the Ministry of Environment, Spatial Planning and Energy (MESPE). It now falls (since February 2003) under the responsibility of the Office for Structural Policy and Regional Development. Governmental decision as from 29<sup>th</sup> December 2003 sets a new Council for Sustainable Development, which is made up of 38 representatives: Ministries and other governmental bodies, NGO's (3 representatives), the private sector (Chamber of Economy and Chamber of Small Business), trade unions, local communities and regions, academics and others. The Council is led by the Minister without Portfolio, Responsible for Regional Development. The Council has Secretariat with 10 representatives from all relevant Ministries; its main subject matter should be coordination and assistance. Government appointed also Secretary of the CSD and the secretariat hosted by GOSPRD and members from all relevant sectors. The CSD has the potential to play an important role in guiding and even leading the SD policy and is a significant actor for assuring sustainable development in the country.

According to the Environmental Protection Act the Environmental Protection Council was established in 1994 by the Parliament to oversee the state of environmental protection. The Council has 11 members appointed by Parliament from the ranks of environmental protection experts. Even if one of the tasks of the Council is (by adopting positions and suggestions) to deal with the strategy leading from national environmental protection policy, its coordination with international trends, and the harmonization of development interests of the Republic, the Council has so far not taken a pro-active role in standing up for the interests of the environment.

Public participation in decision-making is not formalized yet. Slovenia has signed the Aarhus Convention on Access to Information, Public Participation and Access to Justice in Environmental Matters and its ratification is expected in 2004. In practice major policy and legal documents have been developed with public participation (at least consultation on the drafts) within the MESPE. Other ministries do not have such a tradition of cooperation with the public.

In line with the Declaration on Environment and Development, the basic principles of sustainable development were incorporated in the Environmental Protection Act (EPA), adopted in 1993. This is a framework law, where in the provisions on the purpose of the Act it is stated that its objectives are: to satisfy the environmental needs of present and future generations, the aim of environmental protection is the preservation, improvement, and development of the integrity, diversity, and quality of natural elements, natural ecosystems, natural resources, and the natural treasure they represent; and regulate the development, the exploitation and use of space, and other activities affecting the environment must represent a balance between developmental and environmental needs as a basic condition of healthy and enduring development (i.e., sustainable development). Specific tools in order to achieve integration of environment offered by the Act are: Environmental Impact Assessments (EIAs, Article 55 and implementing regulations) are required where a project is likely to have significant environmental impacts. The regulations are fully harmonized with the EU legislation; Environment Vulnerability Studies (EVS, Article 51) should be the base of all planning, programs, and project activities, and for the provision of guidelines for development planning; and, Comprehensive Assessment of Environmental Impact (Article 54, equivalent to Strategic Impact Assessment studies, SIA) should be required before the Minister's consent can be given to any development planning acts of the Republic and local authorities. Recently, new Environmental protection Act has been drafted and is expected to be adopted in May, 2004.

*Water resource management:* The objectives and basic guidelines in the protection and use of waters as natural public resource are defined in the National Environmental Action Plan (NEAP, 1999). The Government as the custodian of all natural resources for the Republic of Slovenia is obliged to enforce the general principles of water resource management based on ecosystem and economic foundations and to treat water as a crucial factor in sustainable development. The Ministry of Environment, Spatial Planning

and Energy (MESPE) is the government body responsible for coordinating water resource management and development, and policy at the national level. The Ministry of Health is responsible for the monitoring of drinking water. The State Secretary for Environment and State Undersecretary within the Water Management Division are the focal point within the MESPE. At the sub-national level there is the river basin authority as local party (division) of the same Ministry. The MESPE controls water resource registers and ground water balances.

Communication is regular and includes informing of the public (press releases, press conferences, interviews, etc.) and a range of other activities (regular and occasional publications, organization of public events, etc.). Interested members of the public can participate in the drawing-up of general legal acts and strategic/planning documents. NGOs are already participating in the process of preparing strategy and programme documents. They are also included in the decision-making process, namely on the level of river basins, where the council of interested stakeholders and other water users has been established, responsible for resolution of conflicts in the field of water management.

The general legislation and regulatory framework for water management is the new Water Act of 2002. etc. New legislation regarding the quality of surface and ground water has also been prepared: Regulation on groundwater quality (2002), Rules on the health suitability of drinking water (1997, amended 1998 and 2000), Regulation on water quality standards of surface fresh water (2002). The Water Law established protected areas where drinking water, thermal, mineral, and medicinal water are significant.

A pricing policy for cost-recovery and equitable allocation of water has been also be put in place with the adoption of the new Water Act, currently Water management program is in preparation. The specific targets of the policy in the agricultural sector are the optimization of water resources and water use for irrigation; in the industrial sector: use of treated water, reuse of industrial wastewater, use of sources of lower quality, economic price of water; for household use: economic price, loss reduction in water supply systems, optimization of use.

Specific legislation for the use of sewage sludge in agriculture includes various decrees amongst which are: Decree on the Input of Dangerous Substances and Plant Nutrients into the Soil and the Decree on the Limit, Warning and Critical Concentration Values of Dangerous Substances in Soil (OG, 68/96).

In order to prevent pollution of freshwater supplies, the Slovenian government is applying the following measures: polluter pays principle; protection of water resources (active and passive, passive with protected areas, active with negative pumping); and construction of waste water treatment plants. The strategy to conserve freshwater is through the optimization of water use in all sectors. There is a policy for protection against floods and droughts and recovery actions. The standards used to measure water are as follows: Rules on the health suitability of drinking water (1997, amended 1998 and 2000); and, for quality monitoring of surface water the methodology recommended by World organizations is used. Standards for quality of surface water: Decree on classification of surface waters and coastal sea (OG, 6/78); and, Decree on maximum allowed concentration of radionucleotides and dangerous substances in surface waters and coastal sea (OG, 8/78) has been used until the adoption of the new legislation (Regulation on water quality standards of surface fresh water (2002) and Regulation on groundwater quality (2002). For evaluation of organic substances in water WHO Recommendations are used.

Drinking water quality is regulated by the act on the Wholesomeness of Foodstuffs and Articles in General use, the Rules on the health suitability of drinking water and their amendments. Legislation does not include private water supply networks, does not include all parameters and does not stipulate the assurance of the quality of measurements.

In addition to the problem of the urban environment the NEAP pays special attention to specific environmental problems of the littoral, rural areas and Karst. In accordance with its guidelines for preserving biodiversity, the comprehensive management of environmental issues is urgently needed for preserving large ecosystems of special environmental significance, which are partially included into sensitive areas due to eutrophication.

In areas with shallow ground water used for water supply, a Decree on the application of dangerous substances and fertilizers to soil, which was adopted in November 1996 (amended in 2001) and Codes of good agricultural practice (2000), tries to narrow the imbalance between fertilizers input and crop uptake with the following measures: limited input of nutrients (fertilizers) with respect to crop uptake; application of fertilizers at the proper time; and sowing winter crops to minimize leaching losses, etc. The decree also controls the use of sewage sludge in agriculture, and sets limits for concentrations of heavy metals in sludge. The use of sewage sludge is controlled by permits given by the Ministry of Environment.

The EPA is the legal basis for rehabilitation and sanitation programmes, and the application of the polluter-pays-principle by introducing pollution charges and the need for environmental impact assessments.

### **Programmes and Projects:**

A. Integrated Water Resources Development and Management: At the end of 1999 the National Assembly adopted the NEAP. According to this document one of the main strategic goals is the construction of water supply networks in water deficient areas. Policy objectives in the field of water management are: raising the rational use of water resources; preferential investments in the area of water supply, which simultaneously restore drainage and waste water treatment; reducing the losses in water systems; moving to the construction of regional water systems and combining the small systems and preventing inappropriate interventions into the water environment. See also under Decision-Making and Capacity-Building, Education, Training and Awareness-Raising.

*Sustainable management of forest*: The Forest Development Programme of Slovenia (FDPS: national forest programme) was adopted by the Parliament according to the Forest Act in 1996. The FDPS is part of the national strategy of sustainable forest management. The Programme acknowledges the Helsinki Resolutions, signed at the Ministerial Conference on the Protection of Forests in Europe in 1993, as one of the most important international commitments and identifies sustainable forest management as the primary goal, including the maintenance of biological diversity and all ecological, social, and production functions. The guidelines of the Programme have to be incorporated into the forest management plans, which are being made for all forests, irrespective of ownership. The Programme ensures sustainable management and protection of Slovenia's forests by a system of forest management plans and permits.

*Integrated management of land*: The goal of the Alpine Convention is a comprehensive policy on the protection and sustainable development of the Alps. The nature and landscape of the alpine region - one of the largest European ecosystems - must be protected, and at the same time the economic and social needs of the native population should be taken into account. The Convention serves as a platform for a transnational policy covering joint ecological and economic problems. It is also an effective instrument for the further development of an active policy on the Slovenian mountain region.

*Integrated management of coastal zone*: The Slovenian Coastal Zone Management Project is being upgraded into a permanent activity concerning development, environmental protection and natural resource protection in the Slovenian coastal zone. The Municipality of Koper, for example, is administering planned land use, protected areas, and infrastructure for integrated coastal management purposes. In the environmental field around the Adriatic Sea basin priority is to be given to the construction or upgrading of wastewater treatment plants or the sewerage system in Koper (50,000 PE),

Izola (30,000 PE) and Piran (30,000 PE) (tertiary treatment) as well as for secondary treatment in Ilirska Bistrica (9,500 PE), Sežana (6,000 PE), Pivka (3,250 PE) and other settlements in the Regional Park Snežnik (in establishment), Landscape Park Škocjanske jame, Regional Park Karst (in establishment) and the Landscape park Dragonja.

**B. Water Resources Assessment:** In the last few years the monitoring of drinking water took place. The amount of pesticide, heavy metals, microbiological and chemical contamination has been monitored. Health risk evaluation measures have been done for most polluted areas such as Mežica and the Krupa River.

Within the water quality monitoring programme in Slovenia, groundwater is controlled twice a year at 84 sampling points, distributed in 15 groundwater fields. All 168 samples are analyzed according to an extended programme including the basic physico-chemical parameters, analysis of heavy metals and organic micropollutants and the record of the organic compounds present. The quality of groundwater is assessed according to the European standards for drinking water.

‘Eurowaternet – Slovenia’ (EWN-SI) completed its first phase in 2001. It is the result of the ‘Eurowaternet implementation in Slovenia’ project developed within the framework of EIONET-SI. The EWN-SI is the system of aggregated, verified and logically integrated information on Slovene waters. Data sources are national information evidence and monitoring systems. The gathered information in the EWN-SI is a basis for the calculation of performance indicators, with which the efficiency of water environment protection policy in Slovenia will be tested. Therefore, they are organized in the DPSIR (driving forces, pressure, state, impact, response) system. The same as the Eurowaternet, the EWN-SI gives information on the pressures on water bodies and on the status of water environment resources in Slovenia. At the same time it gives general information on all surface and groundwater water bodies in Slovenia and other to the system DPSIR related basic information. With the development of the system, users will be able to get even more information (meteorological, hydrological, water use, point and diffuse pollution, dangerous substances in water, quality of drinking and bathing water, ecological status). See also under Information.

**C. Protection of Water Resources, Water Quality and Aquatic Ecosystems:** Priority is to be given to the construction or upgrading of wastewater treatment plants or the sewerage system in Koper (50,000 PE), Izola (30,000 PE) and Piran (30,000 PE) (tertiary treatment) as well as for secondary treatment in Ilirska Bistrica (9,500 PE), Sežana (6,000 PE), Pivka (3,250 PE) and other settlements in the Regional Park Snežnik (in establishment), Landscape Park Škocjanske jame, Regional Park Karst (in establishment) and the Landscape park Dragonja.

The Slovenian Government had already adopted in February 1996 the “Regulation on energy efficiency criteria, low drinking water consumption and lower environmental pollution for some appliances,” where the cost for such equipment can be partially reclaimed from the income tax of an individual consumer. Water effluent charges, sewage charges, levies related to the management of nuclear waste, water extraction charges and landfill tax are in force. In 1995, a regulation introducing a wastewater tax was adopted. The tax is proportional to the pollution loads of the wastewater.

As the custodian of natural resources, the State is obliged to enforce the general principles of water management based on the environment and the economy and to take into account water as the crucial factor in sustainable development. The Action programme is focused: to reduce emissions from point sources - wastewater from industry and livestock farms and urban wastewater; to reduce emissions from diffuse sources - intensive agriculture, dispersed settlements without wastewater treatment facilities; on traffic; to restrict old pollution sources threatening the aquatic environment; and to prevent inappropriate activities affecting the aquatic environment. The MESPE, in association with local communities, is bound

by law (the EPA) to work out technical bases for the determination of protected sources of drinking water and the required rehabilitation programmes for potentially endangered sources of water.

The Coastal Sea River Basin is a sensitive and water-deficient area according to the following criteria: Urban Waste Water Directive; Drinking Water Directive; coastal sea eutrophication area; protected area for bathing water; protected area of water quality for fish and shellfish; refer to EU Water Framework Directive, the programme provides integral measures for sustainable water supply and wastewater management in Coastal Sea River Basin; concept of the co-financing TA for water supply investment programme by Phare LSIF 1999 prepared concept programme of water supply, wastewater drainage and treatment for the co-financing TA by Phare LSIF 1999 prepared and planned investment for ISPA co-financing 2003/04.

Area of the Ilirska Bistrica is potentially sensitive area according to criteria: Urban Waste Water Directive; protection of the Notranjska river protected area and investment programme to be co-financed by PHARE CBC 1999 prepared.

The first park founded on the basis of the Nature Conservation Act is the Secoveljske Soline Landscape Park established by government decree of April 2001. On the coast, near Koper is another landscape park - Škocjanski Zatok, serving to protect a brackish ecosystem.

**D. Drinking Water Supply and Sanitation:** In addition to investments, the NEAP provides for local-level training programmes, monitoring and institutional organization for the purpose of preparing, managing and supervising the implementation of water-supply projects and wastewater collection and treatment within the river basins. In the sphere of water supply, the NEAP places emphasis on programme measures, i.e. on the preparation of professional bases for the protection of sources of drinking water and the preparation of rehabilitation programmes for areas in which sources of drinking water are potentially endangered.

The challenges of safe water supply and sanitation in rural areas have been effectively met by the Institute of Public Health of the Republic of Slovenia and its Local Action Plans. The Ministry of Health and the Ministry of Environment are both responsible for supervision of the implementation of local action plans. Sanitation presented the weakest link in the rural areas, however with the help of PHARE programme Slovenia has started to resolve the problem.

**E. Water and Sustainable Urban Development:** In the area of collecting, discharging and treatment of urban waste water, intensive implementation is being pursued of the EU urban waste water treatment directive, for which a 10-year transition period was approved in the part of the obligation to construct collecting systems and urban waste water treatment plants. The targets are set out in the regulations and action programme - Decision on the action programme of drainage and treatment of urban waste water with the programme of water supply projects (1999). This document also defines precisely which treatment facilities will be constructed/improved, under what timetables and how much financial input will be needed for this.

Data on emissions of substances from sources of pollution are collected within the national Environmental Agency of the Republic of Slovenia (EARS) on the basis of reports on sources of pollution. The indicator Urban wastewater treatment shows that construction work is proceeding according to plans and to the envisaged dynamic. Construction of the majority of the major treatment plants is envisaged by 2005 (Maribor, Ljubljana, Celje, expanding the Koper + Izola treatment plants), so the share of treated urban waste water will also rise significantly.

**F. Water for Sustainable Food Production and Rural Development:** The Biotechnology faculty, University of Ljubljana and The Agricultural Institute of Slovenia are working on irrigation projects and they also study different development scenarios with drought tolerant crops.

**G. Impacts of Climate Change on Water Resources:** Research in the field of Climate Change is conducted at Biotechnical faculty of Ljubljana University and other institutes and covers evaluation of long-term climate data series, climate change scenarios and impacts of climate change.

'Eurowaternet – Slovenia' (EWN-SI) The EWN-SI is the system of aggregated, verified and logically integrated information on Slovene waters. With the development of the system, users will be able to get even more information, including meteorological, hydrological.

**Status: Socio-economic aspects:** In 1993 there were 50,341 unemployed persons, who were included in various measures of active employment policy, and in 1998 that number increased to 67,585 in the year 2000 the figure was 62,970 unemployed persons, in 2002 this number augmented to 78,580 persons included or 76,6 percent of all unemployed persons, compared to 59,1 percent in 2000 (I, 25). In the first few years after Slovenia gained independence there was an extraordinarily strong wave of new enterprises; its peak was in 1992. Since then the number has decreased and in recent years the number has stagnated (I, 24). The social security level in Slovenia is relatively high, especially if we take into account the issues brought about after Slovenia gained its independence and after the new state was constituted (I, 12). The poverty line has increased during the transition period (1990s), but remained stable between 1993 and 1998. In 1999, the poverty rate was 13.6% (I, 85), while the EU average is 15 %. With the transition into a market economy, income inequality is increasing. However, a significant increase in unemployment benefits and other social benefits reduced income inequality 1993-1998 (RE1, 97). The most disadvantaged groups exposed to poverty are: single households with elderly inhabitants, lone parent households on low income, and households with no income earners (e.g., unemployed) (I, 85). The scope of hidden and open homelessness in Slovenia is growing. Hidden homelessness concerns particularly the cases of individuals or families using their personal connections to bridge their housing problems caused by the sudden loss of their own accommodation. Most frequently these are women with children, people without citizenship, people with mental health problems and foreigners. This problem is all the more difficult to solve because there are no social flats available and no other facilities for provisional accommodation to bridge critical housing problems. This problem is made even worse by the fact that there is no adequate system of subsidizing rents (PE, 108).

For the Slovenian economy tourism is very important. It contributes about 9% to the GDP (by the method of satellite accounts) and 9% to the export of goods and services (52% of export of services). The tourism revenue is about 1 billion US\$ yearly, which means 500 US\$ per inhabitant, which is not trivial in comparison to big tourist states. Good tourism income per inhabitant is mostly the result of daily tourist visits (day trips, casinos, shopping, recreation, inns etc). Our tourist resorts are small and so they are particularly suitable for sustainable tourism development. We have only one tourist resort with 1,000,000 tourist overnights per year and only 6 have more than 100,000 overnights. In 2000 the total number of tourist overnights was 6,718,998. The relation between domestic and foreign tourism is 50:50. The foreign tourism is growing at a high rate in Slovenia: in 2000 +24% and in 2001 +11%. Foreign tourists are visiting Slovenia because it is green, picturesque, safe, and hospitable and offers numerous possibilities of relaxation and recreation in intact nature. To preserve that, sustainable development is of the greatest importance.

**Birth rate, life expectancy and net migration:** The population of Slovenia has remained static recently: the birth rate is decreasing while life expectancy and the net migration balance are increasing slightly (RE9, 41). In 1993, a negative natural population increase was recorded for the first time in recent history. It was more evident in 1997, deteriorated further in 1998. Simultaneously, net migration has been slowing

since the 1980s and was negative in 1991 for the first time. As a result, the Slovenian population has been static for several years and is also becoming older. According to statistical data, 16,8 % of Slovenians were below the age of 14 in 1998 and 13,4 % were older than 64 (RE9, 65-66). In the near future the ageing Slovenian population will cause a series of negative consequences, the most important being the lower proportion and ageing of the active population. The key reasons for the low birth rate lie in economic crises and the high unemployment rate, non-availability of suitable housing, high expenses for child-care services, inflexible working hours, a highly competitive labour market in which a woman may be forced to enter a employment contract that forbids her from having children; an important reason is also the development of individualism. Hence, in order to be able to record a higher birth rate enabling the renewal of generations, a number of measures helping young people to decide to have more children would have to be introduced. Migration policy is therefore the only measure at the moment that can change demographic developments in Slovenia. This is true of external (rising in number) and internal (distribution) migrations. Just to maintain the existing number of inhabitants, about 5.000 people should immigrate each year in a couple of years. After 1991, when the migration flows from ex Yugoslavia stopped, migration flows of mixed political and ethnic backgrounds appeared. In 1992 and 1993, Slovenia received more than 30.000 refugees from Croatia and Bosnia and Herzegovina. Actually, about 8.000 of them still remain. Since 1995 they have been included in the total population of Slovenia. Slovenia also faces a strong flow of illegal migrations; in most cases, immigrants wishing to continue their illegal journey through to Western Europe (RE8, 20, 21). By the presumption of stable economic development and an adequate level of social and health provision for the majority of people, Slovenian demographic statistic to the year 2020 predict an increase in life expectancy from the present 71,7 for man and 78,7 for women to 74,1 for man and 81,2 for women.

*Spatial distribution of people:* In Slovenia two basic groups of settlement patterns were formed. On one hand, relatively highly urbanized areas in plains and valleys, which are subject to intensive suburbanization, and on the other peripheral areas which are increasingly subject to depopulation and the decay of the cultural landscape. Slovenia is characterized by a moderate (official) rate of urbanization (approximately 51% in 1991), an above average concentration in suburban areas (two thirds of the population inhabit 12% of the land), and a static and ageing population in two thirds of the Slovenian territory. Regional development policy in the 1990s has not been sufficiently effective. Apart from traditional disparities between more or less developed areas, new forms of disparities have also appeared. These include the crisis in old, traditional industrial and mining areas. Depopulation and, consequently, economic lethargy, in numerous less attractive border and mountainous areas also raises concern. In addition, the disparities between bigger towns and urbanized areas on one hand and remoter rural areas on the other are increasing again. The most favorable conditions are in municipalities with prevailing tertiary or tertiary-secondary sectors, while the worst situation is found in those areas where agriculture is a predominant activity; areas which are remote and less accessible are also at a disadvantage.

Today more than a half of the Slovene population lives in urban areas; however, if we include suburban areas, the share increases to 3/4 of the Slovene population. During the transition period, concern about macro-economic performance as well as the shift away from some "social values" led to a stagnation in the quality of life and in the development of human settlements.

*Agriculture:* Agriculture contributes below 4% of GDP and employs about 6% of the active labour force, but its importance in the area of development, social and political issues is much higher than macroeconomic indicators can show. Agricultural production is characterized by a small-scale farming structure (an average of 5 ha agricultural land per farm; 85% of farms is smaller than 20 ha) and a large share (over 70%) of agricultural land in less favored areas, as well as a relatively low intensity of farming and a low share of full-time farmers (10%). On the other hand, crop rotation is very poor, with maize as the main crop (over 40% of arable land), used mainly as animal fodder. The number of certified organic



farms in Slovenia is rising relatively quickly, from 44 in 1998 to 820 in 2001, although their share of the total number is still below 1%.

*Geography:* The total Slovenian territory covered by the Convention of the Alps amounts to 6.767 km<sup>2</sup>. Slovenia was the Chairing State for 1994 to 1998. Slovenia is one of the most densely forested countries in Europe. The forest covers 1.1 million hectares or 55% of the territory of Slovenia, and dominates as much as three-quarters of the landscape. Desertification is not a major concern for Slovenia but problems related to drought are rising particularly in agriculture. Problems related to drought are rising. Therefore various programmes and projects are still in an early phase, despite that some of them are already active. Most of the activities are focused in repairing and compensating for damage caused by drought and a little attention is made for prevention actions.

*Water resources:* Slovenia is marked by major differences between the areas with the highest precipitation in the north-west of the country and the least precipitation in the east, where particularly in summer there are often water shortages and lengthy summer droughts. The mean annual quantity of all water potentially available in Slovenia amounts to 32.1 km<sup>3</sup>, and on average 16,000 m<sup>3</sup> of water is available each year per inhabitant, which is significantly higher than the European average. As much as 41 % of the water that flows each year across Slovenian territory comes in from Austria. Analyses of the trends of significant flows, which are spread across most of Slovenia, point to a growing trend of large flows and a falling trend of medium and small flows. The circumstances indicate a reduction in the available water in the coastal Primorje region, into which in order to maintain the current state (with increased use and a continuation of trends) it will be necessary to import water from the more abundant river basins. The trend of annually potential available water in Slovenia is falling, on the basis of which one may suspect that the “water deficit” areas will expand. Reserves of groundwater are spatially unequally distributed. Almost two thirds of reserves are in the central area, in the Sava river basin, while the smallest reserves are in the extreme north-east of the country (the Mura basin) with chiefly intergranular porosity strata and in the extreme south-west of the country (coastal area) with chiefly karstic fissured porosity. The majority of water monitoring stations (41 %) for aquifers with intergranular porosity show a statistically significant fall in areas of groundwater.

Scattered settlement and numerous settlements with less than 2,000 inhabitants have a large impact on the extent and structure of municipal infrastructure and on the organization of municipal services. Systems of water supply, municipal wastewater treatment and disposal, and precipitation collection are either non-existent or inadequate and dispersed owing to the topographical features of Slovenia.

Drinking water supply for 77% of the population is organized through public networks (treated), 14% from private wells, 5% from rainwater reservoirs and 4% from other sources. Approximately 47% of the total amount of piped drinking water is used by households, 39% by industry and the manufacturing sector, while 8% are supplied to livestock farms, 5% to the tourist industry and 1% to all other purposes.

The major constraints faced by the Government in reaching its objectives in the water sector are the lack of appropriate institutional capacity (development of national and local institutions), and the need for additional financial sources. Problems in the field of the protection of drinking water resources include: shortage of drinking water in the dry season in areas deficient in water; sizeable losses due to poor maintenance of water-supply networks - reduction of losses to an economically acceptable level is often equivalent to an additional water source; protection of water sources: more than half the public water-supply systems have no specific water-source protection zones with corresponding regimes of management, nor do they carry out supervision of those zones; quality of drinking water: the quality of groundwater and springs is improving, but the most endangered being the karst springs; both chemical and microbiological pollution is present; karst springs often become muddy since the self-purifying capacity of karst groundwater is incomparably weaker than that of alluvial groundwater; securing

permanent and proper measurement in water collection areas; water supply exploits only underground sources (groundwater, wells) and does not utilize surface waters for processing activities, e.g. in industry. Floodplains cover a relatively small area (3-5 % of national territory), however, since floods tend to affect valley areas, some densely populated areas, including all their economic activities - transport, agriculture, industry and others - are vulnerable to flooding. Recently, smaller streams are becoming more and more exploited for small hydroelectric power plants which are commonly of a derivative type and are therefore extremely destructive to streams.

Owing to excessive water content, much agricultural land in Slovenia has traditionally been drained. In the past the main goal of drainage was to change the function of wetlands, which is in contradiction with the protection of the natural environment and conservation of biodiversity.

In Slovenia the period 1997–2000 was marked by the most critical pollution of groundwater by pesticides, chiefly atrazine and its metabolite diethyl-atrazine, and by nitrates. In this period the aquifers in north-eastern Slovenia experienced the heaviest pollution with nitrates. Long-term measurements of the nitrate content in groundwater show a general falling trend, yet despite this the average nitrate content for the three year period 1998–2000 is still higher than the permissible limit values of 25 mg NO<sub>3</sub>/l in the Prekmurje, Mura, Apaca, Drava, Ptuj, Sorško and Krško polje areas, in the Lower Savinja Valley, the Bolska and Kamniška Bistrica valleys. The sources of pollution are agriculture, industry and municipalities.

Owing to favourable natural conditions and the needs of the construction sector, the exploitation of sediments from river beds is a traditional commercial activity affecting our water streams. The demand dictates uncontrolled exploitation with long-term negative impacts, while complete abandonment of the activity would cause negative impacts on water regimes and the morphology of streams through sedimentation and flooding.

The quality of drinking water is regularly monitored. In the majority of cases public water supply is appropriate and adequate. In 2000 almost 155,000 (7.8 %) citizens still had no drinking water supplied from the public water supply. Hydric epidemics appear in systems that are unmanaged, without water protection zones arranged, and where the state of catchments and equipment is poor. Drinking water microbiological research has shown that there are more unsuitable samples where there are also relatively more medium and small-scale public water supply systems. In 2000 the most frequently exceeded recommended value (0.1 µg/l) was for the pesticide atrazine. Another cause of unsanitary drinking water is the excessively high concentration of nitrates, particularly where groundwater in agricultural areas is used as the drinking water source. In 2000 there were four public water supply systems with permanently excessive nitrate concentrations (50 mg/l as NO<sub>3</sub>), all in the area of supervision of the Murska Sobota Health Protection Institute.

The basic public utility infrastructure is incomplete or decrepit, wastewater treatment plants are defective or inadequate and the problem of waste disposal has still not been solved. There is almost a 50% loss of water from water supply systems attributed to the network being out-dated. In addition, the treatment of wastewater generated by the population is insufficient.

Users of water are grouped into sectors, which are determined in view of the manner of supplying water, and using the records deriving from this: public water supply (cca. 15 %) (households and public institutions); industry (cca 18%) (industrial facilities, health resorts); energy (more than 60%) (cooling water for thermal and nuclear power stations); and agriculture (irrigation);.

**Capacity-Building, Education, Training and Awareness-Raising:** At the state level there is continuing (extra-institutional) education and training of experts responsible for water management and provision of regular information to the public on the state of the aquatic environment.

15.000 children from primary schools joined the educational project “Drop of Water” organized by the Slovenian Committee for UNICEF, with the aim to focus children on the value of drinking water, its reasonable use, where there is enough water and its shortage in the undeveloped countries (they raised 10,000 US\$ which was enough to build four wells in Namibia- the Agenda 21 goal is to build global partnerships). Schools promote programmes with environmental themes, including “world day for water”.

The Environmental Agency of the Republic of Slovenia (EARS) informs the public during the driest months about measures for conserving water. There are some awareness-raising activities for saving water in households and industry. The Slovenian Fund for Water Protection is a partnership project of the enterprise Helios, national and local governments and NGOs. The aim of the project is to promote the consumption of less environmentally damaging paint and varnish products and to provide funding for actions to protect water sources. In the year 2000 the Consumers’ Association of Slovenia conducted an educational programme for the women on farms on how to save water. The intention is to have such programmes once per year.

There are also innovative approaches to educate and raise awareness of families and local communities such as the “Economizing on drinking water and the use of rainwater in housekeeping” - promoted by some NGOs. They are involved in promoting innovative education, public awareness or training activities related to sustainable development.

**Information:** The process of integration of Slovenia into the European Environment Information and Observation Network - EIONET is already completed, and plays a major role and has great responsibility in the common information system. The legal bases for setting up the environmental protection information system (EPIS) are laid down in Article 69 (monitoring), Article 73 (EPIS) and Article 74 (statistics) of the Environmental Protection Act. Under the National Statistics Act the MESPE should propose methods of data collection and processing, while the Statistical Office of the Republic of Slovenia should give its opinion on the MESPE’s proposal. All the provisions have not been implemented yet, but in certain segments the linking of information technologies has been successful: e.g. the EARS, the database on special waste, etc.

Basic data banks, such as basic records, registers and cadastres, are the most important parts of information systems and it is because of them that information systems are built. The main purpose of these banks is to offer a basis for determining the state and trends of environmental pollution and for understanding and knowledge of ecosystems and natural resources in relation to socio-economic indicators. The second purpose is to provide relevant data to support decision-making processes, public information and the preparation of environmental education programmes. These banks are also a basis for environmental statistics and analyses and for various publications (including in electronic form - Internet) to provide public information.

In the agricultural sector the Environmental Agency of the Republic of Slovenia (EARS) performs regular monitoring of water use and emissions into land; the EARS distributes the information on the quantity and the state of surface and groundwater streams. State monitoring of the quality of water has already been set up as well as the water sources register and register of emissions into water. Monitoring of the quality of drinking water is well established.

The monitoring on water management is carried out by the Environmental Agency of the Republic of Slovenia, a body within the Ministry of the Environment and Spatial Planning itself

(<http://www.arso.gov.si/>). The new State of the Environment Report 2002, containing also data from water quality monitoring is available on the internet (<http://www.gov.si/mop/en/index.htm>).

On the web sites Statistical office (<http://www.stat.si/eng/index.asp>) are aggregated data about: water supplied in enterprises; water used in enterprises by type of use and activities; discharge of waste water used by enterprises to land, public sewerage and surface water; purification of waste water used by enterprises. The Eurowaternet database is also available on the Internet

**Research and Technologies:** To increase water supply, research is being undertaken into new sources of water as in the artificial enrichment of ground water sources. The private sector is being included in designing (expert work), constructing and co-financing, and eventually operating the infrastructure for supply and treatment of water. At the state level until 2000 there was the Water Research Programme for the period, which directly supported the national programme in the field of waters. One continuous activity is to upgrade the current research system by the long-term planning of scientific studies, by promoting the cooperation of technical and nature science professions, by introducing modern methods and technologies for the protection and exploitation of waters and by motivating and training domestic experts. The basic goal is to control the entire cycle of environmental protection research - identification of problems, simulation of procedures, formulation of proposed solutions and monitoring of their effectiveness.

Extensive research is being conducted in the role of constructed wetlands in wastewater treatment and sustainable rehabilitation of landfill sites (one of the research projects done by Limnos was awarded the Lillehammer Award in June 2001 in the framework of EUREKA - the biggest industrial developing programme in the Europe and others domestic and international awards).

Research related to water management is currently being undertaken in Slovenia by public and private research institutes, universities and consulting firms. Research on yeast microorganisms, microorganisms for treatment of biological wastewater is being conducted as well.

Project Regional Innovation and Technology Transfer Strategies for Slovenia aims at the enhancing the innovative capacity of the EU region of Slovenia with the help of the better collaboration between SMEs, research institutions, Universities, public sector and the development agencies in Slovenia. The project will provide a basis and infrastructure and know how which will facilitate development of innovations. As mentioned already the project does focus only on the EST but these technologies will be represented. It could be suggested that similar programmes, which would focus entirely on the EST should be developed as a follow up stage from the existing programme.

Eco-fund provides favourable loans to the business to facilitate the transfer of EST (call for proposals is focusing on two broad areas: environmentally sound technologies and products and on devices and technologies for environmental protection). Few success stories (funding in new varnishing technologies in appliances and wood industry) have been recorded so far. In the near future it is expected that investments will be required for new technologies for reducing packaging waste, due to fact that the legislation regulating this area has entered into the force. The Eco-fund has prepared a new funding scheme in 2002, which supports individuals to invest into renewable energy resources and energy efficiency.

A one year project "Cleaner Production 2001" is funded partially by the Ministry of Economy, Chamber of Commerce and Industry and most likely also by the government of Austria. Its aim is introduction of the Cleaner production approach in the selected companies (13 involved in the project in the year 2001/02).

**Financing:** The following are the available sources of funding for the implementation of programmes and investments for water supply and for wastewater collecting and treatment: state budget appropriation for construction of municipal infrastructure; the wastewater tax; municipal budgetary funds; loans from the Eco Fund (non-commercial loans granted according to the selected priorities of the National Environmental Action Plan); long-term provisions for solving environmental problems reserved by enterprises under the Privatization Act; EU grants to associate members for the implementation of the Acquis Communautaire (PHARE Cross-Border Cooperation Programme (CBC), PHARE Large-Scale Infrastructure Facility Programme (LSIF), PHARE National Programme; resources from pre-accession funds as of 2000 (ISPA fund for higher-cost infrastructure projects); private-sector investments: mainly under concession contracts, and especially for wastewater treatment projects, which enables higher-quality and cost-effective services (B.O.T. models).

State Budgetary funds include funds earmarked for the building of municipal infrastructure, allocated annually by the MESPE on the basis of public tenders for projects for urban wastewater collection and treatment, and for projects for drinking-water supply and protection of water sources.

Taxpayers liable to a waste water tax are, under legal regulations, exempt from payment of that tax if they submit an investment programme and invest funds in wastewater collection and treatment projects. The funds so collected represent a significant direct source of funding of infrastructure facilities for water protection.

Projects eligible for grant budgetary funds, loans from the Eco Fund, and foreign grants or loans from multilateral creditors must, in terms of their content, follow the implementation guidelines contained in European legislation, and must be included on the NEAP priority list or the priority lists of the environmental protection action plans for the corresponding sectors.

Funds are scarce for both new investments, and the operation and maintenance of completed investment projects. The following are problems in connection with potential sources of funding demand attention: the prices of municipal services are not yet formed the way they are formed in the EU, although with the decision on price formation a step away from former administrative pricing has been made; polluters do not provide a stable systemic source of funds; the internalization of external pollution costs is too slow and the upper limit for municipal borrowing is 10% of the municipal budget. From 1995 to 2000, 91 capital projects for water supply were so-financed with state budgetary funds amounting to totaling US\$ 3,9 millions. From 1994 to 2000 the public Eco Fund approved loans to local communities for the construction of the water supply system in the amount of US\$ 10,3 millions. The draft project budget for the programme of protection of the aquatic environment within the 2001-2003 period is 391,1 mio US\$ and within the 2004-2006 period is 519,4 mio US\$ (in constant prices 1999). Sources of investment will be total (public, private, national and communities). The cost of approximation to the EU in the field of water protection is estimated to be 1.260,2 US\$ mio that is 43% of the total NEAP activities. 73% of the funding will be from the state budget.

According to preliminary estimates, future investments in the field of water supply will be financed from the following potential domestic sources: wastewater tax; sewage connection fee (municipal contribution) and sewage service charge; grant funds from the national and municipal budgets and loans by the Eco Fund earmarked for the building of infrastructural facilities in the field of the protection of waters coming under the competence of local communities. Other available sources are foreign funds, including EU grants and credit funds from international financial institutions and the private banking sector.

As water management is an area where heavy investments are necessary, the programme for waters specifies available financial sources for execution of programmes and investments for water supply and waste water treatment and enables the financing of the water management field.

Through the programme Water Tolar (implemented in collaboration with Helios (paint producing company) the MESPE and the various Local communities) provides for a fund which is used to finance different projects related to the clean up of bodies of water throughout Slovenia.

The total estimated cost of the most important investment in wastewater collecting and treatment systems in the Koper, Izola, Piran coastal sea river basin is US\$ 47,1 millions. The year of completion will be 2005. Sources of funding: tax, foreign sources, the municipal budget, the national budget and other sources. The total estimated cost of investment in wastewater collecting and treatment systems in Ilirska Bistrica, which is in progress, is US\$ 5,2 millions. The year of completion will be 2003. Sources of funding: tax, foreign sources, municipal budget, national budget and other sources.

For aspects related to funding from international sources, see under *Cooperation*.

**Cooperation:** External funding support is received for the regional coastal water supply (Rižana Waterworks). External funding sources include loans from international financial institutions (WB, EBRD, EIB). In addition, the World Bank supports the Primorska Regional Water Supply. There are also private sector investments —mainly under concession agreements, for wastewater treatment projects.

Since 1994 the European Commission has, through the PHARE programme, co-financed lower-cost infrastructure projects in the field of environmental protection, and in 1998 it launched the LSIF programme, whose non-repayable funds are earmarked for the implementation of European environmental legislation in the field of water supply and wastewater collection and treatment. During 2000-2006, the European Commission has earmarked grant funds for associate members through the ISPA programme (Instrument for Structural Policies for Preaccession).

Slovenia signed several international conventions concerning water: Convention on the Protection of the Mediterranean and Protocol on the Protected Areas of the Mediterranean (Barcelona, 1992); Convention on the Protection of Trans-Border Watercourses and Lakes (Helsinki, 1992); Convention on Cooperation in the Protection and Use of the River Danube Waters (Sofia, 1994); Convention on Marshes of International Concern (Ramsar, 1993); Convention on Biodiversity (Rio de Janeiro, 1992); The Alps Convention (Salzburg, 1991).

Slovenia, as a member of the Danube convention, is also adopting the international early warning system, which is already in operation. Slovenia has a number of bilateral agreements with neighbouring countries such as Italy, Austria, Hungary, and Croatia regarding shared water resources. It is also party to the Convention on cooperation for the protection and sustainable use of the Danube river, the Barcelona Convention and the Convention on the Protection and Use of Transboundary Watercourses and International Lakes.

Conventions signed with neighbouring countries are: with Austria—Agreement on the Regulation of River Drava Waters and Agreement on the Regulation of River Mura Waters; with Hungary—Agreement on the Regulation of Border Watercourses; with Italy—Agreement on the Regulation of the River Soca, Agreement on the Protection of the Adriatic (Slovenia, Italy, Croatia); with Croatia—Agreement on the Regulation of Waters, Agreement on the Protection of the Adriatic (Slovenia, Italy, Croatia).

There are many water resources management conducted as part of bilateral cooperation between Slovenia and: Austria (e.g. Commission for Sustainable Use of Waters); Croatia (e.g. water management); and, Hungary (e.g. sustainable development of border area with Austria)